SEQUENCE LISTING

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SUZUKI, YUJI

<120> PROCESS FOR PRODUCING PEPTIDES USING A HELPER PEPTIDE

<130> 47259.0373-US

<140> 09/402,093
<141> 1999-09-29

<150> PCT/JP99/00406
<151> 1999-01-29

<150> JP 10-32272
<151> 1998-01-30

<160> 72

<170> PatentIn Ver. 3.3

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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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<220>
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Pro Phe His Leu Leu Val Tyr
1 5

<210> 4
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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Val Asp Asp Asp Asp Lys
1 5

<210> 5
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<220>
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Gly Cys His His His His
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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Pro Gly Gly Arg Pro Ser Arg His Lys Arg
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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<220>
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Ser Asp His Lys Arg
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<220>
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1 5 10 15

Arg Trp Gly Arg Ser Gly Ser
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<210> 10
<211> 20
<212> PRT
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<220>
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Gly Ser Gly Ser
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<210> 11
<211> 69
<212> DNA
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<223> Description of Artificial Sequence: Synthetic coding nucleotide

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<400> 11
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Gln Met His Gly Tyr Asp Ala Glu Leu Arg Leu Tyr Arg Arg His His
1 5 10 15

cgg tgg ggt cgt tcc gga tcc 69
Arg Trp Gly Arg Ser Gly Ser
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<210> 12
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<220>
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<400> 12
Gln Met His Gly Tyr Asp Ala Glu Leu Arg Leu Tyr Arg Arg His His
1 5 10 15

Arg Trp Gly Arg Ser Gly Ser
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<210> 13
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<212> DNA
<213> Artificial Sequence

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<210> 14
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<212> DNA
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<223> Description of Artificial Sequence: Synthetic oligonucleotide

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<220>
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Met Thr Met Ile Thr Asp Ser Leu Ala Val
1 5 10

gtt tta caa cgt aaa gac tgg gat aac cct ggc gtt acc caa ctt aat 159
Val Leu Gln Arg Lys Asp Trp Asp Asn Pro Gly Val Thr Gln Leu Asn
15 20 25

cgc ctt gca gca cat ccc cct ttc gcc agc tgg cgt aat agc gac gac 207
Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp Arg Asn Ser Asp Asp
30 35 40

gcc cgc acc gat cgc cct tcc caa cag ttg cgc agc ctg aat ggc gaa 255
Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu
45 50 55

tgg cgc ttt gcc tgg ttt ccg gca cca gaa gcg gtg ccg gca agc ttg 303
Trp Arg Phe Ala Trp Phe Pro Ala Pro Glu Ala Val Pro Ala Ser Leu
60 65 70

ctg gag tca gat ctt cct gag gcc gat act gtc gtc gtc ccc tca aac 351
Leu Glu Ser Asp Leu Pro Glu Ala Asp Thr Val Val Val Pro Ser Asn
75 80 85 90

tgg cag atg cac ggt tac gat gcg atg cat ggt tat gac gcg gag ctc 399
Trp Gln Met His Gly Tyr Asp Ala Met His Gly Tyr Asp Ala Glu Leu
95 100 105

cgc ctg tat cgc cgt cat cac ggt tcc gga tcc cct tct cga cat ccg 447
Arg Leu Tyr Arg Arg His His Gly Ser Gly Ser Pro Ser Arg His Pro
110 115 120

cgg cat gcg gaa ggt acc ttt acc agc gat gtg agc tcg tat ctg gaa 495
Arg His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu
125 130 135

ggt cag gcg gca aaa gaa ttc atc gcg tgg ctg gtg aaa ggc cgt ggt 543
Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
140 145 150

taagtcgaca gcccgcctaa tgagcgggct ttttttttctc ggaattaatt ctcatgtttg 603

acagcttatc atcgataagc ttta 627

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Trp Asp Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro
20 25 30

Pro Phe Ala Ser Trp Arg Asn Ser Asp Asp Ala Arg Thr Asp Arg Pro
35 40 45

Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu Trp Arg Phe Ala Trp Phe
50 55 60

Pro Ala Pro Glu Ala Val Pro Ala Ser Leu Leu Glu Ser Asp Leu Pro
65 70 75 80

Glu Ala Asp Thr Val Val Val Pro Ser Asn Trp Gln Met His Gly Tyr
85 90 95

Asp Ala Met His Gly Tyr Asp Ala Glu Leu Arg Leu Tyr Arg Arg His
100 105 110

His Gly Ser Gly Ser Pro Ser Arg His Pro Arg His Ala Glu Gly Thr
115 120 125

Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu
130 135 140

Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
145 150

<210> 21
<211> 187
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
fusion protein

<400> 21
Met Thr Met Ile Thr Asp Ser Leu Ala Val Val Leu Gln Arg Lys Asp
1 5 10 15

Trp Asp Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro
20 25 30

Pro Phe Ala Ser Trp Arg Asn Ser Asp Asp Ala Arg Thr Asp Arg Pro
35 40 45

Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu Trp Arg Phe Ala Trp Phe
50 55 60

Pro Ala Pro Glu Ala Val Pro Ala Ser Leu Leu Glu Ser Asp Leu Pro
65 70 75 80

Glu Ala Asp Thr Val Val Val Pro Ser Asn Trp Gln Met His Gly Tyr
85 90 95

Asp Ala Pro Ile Tyr Thr Asn Val Thr Tyr Pro Ile Thr Val Asn Pro
100 105 110

Pro Phe Val Pro Thr Glu Pro His His His His His Gly Gly Arg Gln
115 120 125

Met His Gly Tyr Asp Ala Glu Leu Arg Leu Tyr Arg Arg His His Arg
130 135 140

Trp Gly Arg Ser Gly Ser Pro Ser Arg His Lys Arg His Ala Glu Gly
145 150 155 160

Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys
165 170 175

Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
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<210> 22
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
fusion protein

<400> 22
Met Thr Met Ile Thr Asp Ser Leu Ala Val Val Leu Gln Arg Lys Asp
1 5 10 15

Trp Asp Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro
20 25 30

Pro Phe Ala Ser Trp Arg Asn Ser Asp Asp Ala Arg Thr Asp Arg Pro
35 40 45

Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu Trp Arg Phe Ala Trp Phe
50 55 60

Pro Ala Pro Glu Ala Val Pro Ala Ser Leu Leu Glu Ser Asp Leu Pro
65 70 75 80

Glu Ala Asp Thr Val Val Val Pro Ser Asn Trp Gln Met His Gly Tyr
85 90 95

Asp Ala Pro Ile Tyr Thr Asn Val Thr Tyr Pro Ile Thr Val Asn Pro
100 105 110

Pro Phe Val Pro Thr Glu Pro His His His His His Gly Gly Arg Gln
115 120 125

Met His Gly Tyr Asp Ala Glu Leu Arg Leu Tyr Arg Arg His His Glu
130 135 140

Ser Gly Ser Pro Ser Arg His Lys Arg His Ala Glu Gly Thr Phe Thr
145 150 155 160

Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile
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Ala Trp Leu Val Lys Gly Arg Gly
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<210> 23
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
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<400> 23
Met Thr Met Ile Thr Asp Ser Leu Ala Val Val Leu Gln Arg Lys Asp
1 5 10 15

Trp Asp Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro
20 25 30

Pro Phe Ala Ser Trp Arg Asn Ser Asp Asp Ala Arg Thr Asp Arg Pro
35 40 45

Ser Gln Gln Leu Arg Ser Leu Asn Gly Glu Trp Arg Phe Ala Trp Phe
50 55 60

Pro Ala Pro Glu Ala Val Pro Ala Ser Leu Leu Glu Ser Asp Leu Pro
65 70 75 80

Glu Ala Asp Thr Val Val Val Pro Ser Asn Trp Gln Met His Gly Tyr
85 90 95

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Asp Ala Pro Ile Tyr Thr Asn Val Thr Tyr Pro Ile Thr Val Asn Pro
            100                 105                 110

Pro Phe Val Pro Thr Glu Pro His His His His His Gly Gly Arg Gln
        115                 120                 125

Met His Gly Tyr Asp Ala Glu Leu Arg Leu Tyr Arg Arg His His Glu
    130                 135                 140

Ser Gly Ser Pro Ser Arg His Lys Arg His Ala Glu Gly Thr Phe Thr
145                 150                 155                 160

Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile
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Ala Trp Leu Val Lys Gly Arg Gly
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<400> 24
Ser Cys His Lys Arg
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<400> 25
Arg His His Gly Pro Gly
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 26
His Asp Glu Phe Glu Arg His Ala Glu Gly Thr Phe Thr Ser Asp Val
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Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
20 25 30

Val Lys Gly Arg Gly
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<223> Description of Artificial Sequence: Synthetic peptide

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His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
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Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

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<212> PRT
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<400> 28
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

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<212> PRT
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<220>
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His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys
20 25

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly
20 25

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<212> PRT
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<220>
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<400> 31
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

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<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 32
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys
20 25

<210> 33
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly
20 25

<210> 34
<211> 31
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

<210> 35
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Arg
20 25 30

<210> 36
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 36
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Arg
20 25 30

Arg

<210> 37
<211> 32
<212> PRT
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<220>
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<400> 37
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Lys
20 25 30

<210> 38
<211> 33
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 38
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Lys
20 25 30

Lys

<210> 39
<211> 33
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 39
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Lys
20 25 30

Arg

<210> 40
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 40
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Arg
20 25 30

Lys

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<220>
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<223> Thr, Gly or Ser

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Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

<210> 42
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<212> PRT
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<220>
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<222> (2)
<223> Thr, Gly or Ser

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

<210> 43
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 43
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
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Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

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<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

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His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

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<211> 31
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Arg Gly Arg Gly
20 25 30

<210> 46
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 46
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Arg Gly Arg
20 25 30

<210> 47
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 47
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Lys Gly
20 25 30

<210> 48
<211> 30
<212> PRT
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<223> Description of Artificial Sequence: Synthetic peptide

<400> 48
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Lys
20 25 30

<210> 49
<211> 31
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

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<222> (2)
<223> Thr, Gly or Ser

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20 25 30

<210> 50
<211> 30
<212> PRT
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<220>
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<222> (2)
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Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

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<220>
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<222> (2)
<223> Thr, Gly or Ser

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Arg Gly Arg Gly
20 25 30

<210> 52
<211> 30
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<222> (2)
<223> Thr, Gly or Ser

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Arg Gly Arg
20 25 30

<210> 53
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<220>
<221> MOD_RES
<222> (2)
<223> Thr, Gly or Ser

<400> 53
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Lys Gly
20 25 30

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<220>
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<220>
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<222> (2)
<223> Thr, Gly or Ser

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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Lys
20 25 30

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<400> 55
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1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Arg Gly Arg Gly
20 25 30

<210> 56
<211> 30
<212> PRT
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<400> 56
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1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Arg Gly Arg
20 25 30

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<220>
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<400> 57
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1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Lys Gly
20 25 30

<210> 58
<211> 30
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<400> 58
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Lys
20 25 30

<210> 59
<211> 31
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<223> Description of Artificial Sequence: Synthetic peptide

<400> 59
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1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Arg Gly Lys Gly
20 25 30

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<400> 60
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
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Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Arg Gly Lys
20 25 30

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Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Arg Gly Arg Gly
20 25 30

<210> 62
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20 25 30

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<220>
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<223> Thr, Gly or Ser

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Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Lys Gly
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<400> 64
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1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Lys Gly Lys
20 25 30

<210> 65
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20 25 30

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Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Arg Gly Lys
20 25 30

<210> 69
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Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Arg Gly Lys Gly
20 25 30

<210> 70
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<223> Thr, Gly or Ser

<400> 70
His Xaa Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Arg Glu Phe Ile Ala Trp Leu Val Arg Gly Lys
20 25 30

<210> 71
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<400> 71
Pro Ser Arg His Pro Arg
1 5

<210> 72
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<212> PRT
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<400> 72
Pro Ser Arg His Lys Arg
1 5